

CLAIMS

1. through 40. (Cancelled)

41. (Previously Presented) A primary unit, for use in a power transfer system that has first and second portable electronic devices, each said device being separable from the primary unit and having a secondary coil adapted to couple with an electromagnetic field generated by the primary unit, when the device is placed in a working disposition on or in proximity to a power transfer surface of the primary unit, so that power is transferred inductively from the primary unit to the device, and the first and second devices differing from one another in one or more of: a device size; an area parallel to the power transfer surface over which the secondary coil of the device extends when the device is in its said working disposition; and a power requirement of the device;

said primary unit being adapted to transfer power inductively to each said device and comprising:

a field generator having first and second coils for generating said electromagnetic field over the power transfer surface, said second coil differing from said first coil in that a power transfer area provided by the second coil, if activated independently of said first coil, differs in size or shape from a power transfer area provided by the first coil if activated independently of the second coil, and the field generator also having an activator for activating said first and second coils to provide, at the power transfer surface, a first power transfer area for transferring power inductively to the first device and a second power transfer area for transferring power inductively to the second device.

42. (Previously Presented) A primary unit according to claim 41, wherein the activator is operable to provide both the first and second power transfer areas at the same time.
43. (Withdrawn) A primary unit according to claim 41, wherein the activator is operable to provide the first and second power transfer areas at different respective times.
44. (Withdrawn) A primary unit according to claim 41, wherein the activator is operable to activate the first coil but not the second coil to provide the first power transfer area, and to activate the second coil but not the first coil to provide the second power transfer area.
45. (Withdrawn) A primary unit according to claim 41, wherein the activator is operable to activate one but not the other of the first and second coils to provide the first power transfer area and to activate both the first and second coils together to provide the second power transfer area.
46. (Previously Presented) A primary unit according to claim 41, wherein the first and second power transfer areas are arranged in a substantially non-overlapping manner at the power transfer surface so that the first and second portable devices can be placed side by side, on or in proximity to the first and second power transfer areas respectively, to receive power from the primary unit at the same time.
47. (Withdrawn) A primary unit according to claim 41, wherein the first and second power transfer areas are arranged in an overlapping manner at the power transfer surface so that only one of the first and second portable devices can be placed, on or in proximity to the first or second power transfer area, as the case may be, to receive power from the primary unit at any one time.

48. (Previously Presented) A primary unit according to claim 41, wherein the activator is operable to activate at least one of said first and second coils only when one of said portable devices is sensed as being present on or in proximity to the power transfer surface.

49. (Previously Presented) A primary unit according to claim 41, wherein the activator is operable, when one of said devices is placed on or in proximity to said power transfer surface, to sense at least one of said device size, said secondary-coil area and said power requirement of the device, and to selectively activate at least one of said first and second coils according to the sensing result.

50. (Previously Presented) A primary unit according to claim 41, wherein the second coil is of a different shape from said first coil.

51. (Previously Presented) A primary unit according to claim 41, wherein at least one of said first and second coils is arranged to generate an electromagnetic field which is generally parallel to the power transfer surface.

52. (Withdrawn) A primary unit according to claim 41, wherein at least one of said first and second coils is arranged to generate an electromagnetic field which is generally perpendicular to the power transfer surface.

53. (Withdrawn) A primary unit according to claim 41, wherein at least one of the first and second coils comprises an array of generally parallel conductors, connected to be supplied respectively with instantaneous currents flowing in the same direction.

54. (Withdrawn) A primary unit according to claim 41, wherein at least one of the first and second coils is generally elongate such that at least one of the portable devices receives power in a plurality of different positions along a first, longer axis of the coil, but receives no

power in positions offset from said first axis, so as to provide one linear degree of freedom of movement of the device along the power transfer surface.

55. (Withdrawn) A primary unit according to claim 41, wherein at least one of the first and second coils is generally rectangular in shape, so as to provide one linear degree of freedom of movement of the device.

56. (Withdrawn) A primary unit according to claim 41, wherein at least one of the first and second coils is substantially circular or elliptical or the like, so as to provide a rotational degree of freedom of movement of the device.

57. (Previously Presented) A primary unit according to claim 41, wherein one of the first and second coils encloses an area parallel to said power transfer surface that is larger than an area parallel to said power transfer surface enclosed by the other of said first and second coils.

58. (Withdrawn) A primary unit according to claim 41, wherein the first and second coils overlap one another.

59. (Withdrawn) A primary unit according to claim 41, wherein the second coil is contained within a boundary of the first coil.

60. (Withdrawn) A primary unit according to claim 59, wherein said first and second coils are arranged in a substantially concentric or nested configuration.

61. (Withdrawn) A primary unit according to claim 60, having at least one further coil contained within the boundary of the first coil, said second and further coils not overlapping one another or being nested.

62. (Withdrawn) A primary unit according to claim 60, having at least two further coils contained within the boundary of the first coil, at least one contained coil being nested with

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another contained coil and at least one contained coil not being nested with another contained coil.

63. (Withdrawn) A primary unit according to claim 60, wherein the field generator is provided with four nested sets of coils, each having a substantially right-angled triangular shape, and arranged such that the right-angles of the four sets of coils all point towards a single origin point such that the four sets of nested coils have an overall substantially square or rectangular configuration.

64. (Withdrawn) A primary unit as claimed in claim 63, wherein, in operation, adjacent sets of coils are driven in antiphase so as to cause rotation of a resulting electromagnetic field about the origin point.

65. (Withdrawn) A primary unit according to claim 41, wherein said first coil is one of a first pair of coils and said second coil is one of a second pair of coils, each coil of each pair of coils having a corner portion, the coils being arranged such that the corner portions all point towards an origin point.

66. (Withdrawn) A primary unit according to claim 65, having third and fourth pairs of coils, each coil of said third and fourth pairs of coils having a corner portion, the coils of the third and fourth pairs of coils being arranged such that the corner portions all point towards an origin point, and wherein, in operation, the first and third pairs of coils are driven in antiphase relative to the second and fourth pairs of coils so as to cause rotation of a resulting electromagnetic field about the origin point.

67. (Withdrawn) A primary unit as claimed in claim 65, wherein each coil of each pair of coils has a substantially right-angled triangle shape or a quarter circular shape.

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68. (Previously Presented) A primary unit according to claim 41, wherein the power transfer surface has an indication of a correct device position or rotation.
69. (Previously Presented) A primary unit according to claim 41, wherein at least one of the portable devices bears an indication of a correct device position or rotation for placing the device in its said working disposition on or in proximity to the power transfer surface.
70. (Previously Presented) A primary unit according to claim 68, wherein the indication indicates one or more limits to the degrees of freedom for placing the device in its said working disposition on or in proximity to the power transfer surface.
71. (Previously Presented) A primary unit according to claim 68, wherein the indication comprises outlining of the coil area.
72. (Withdrawn) A primary unit according to claim 68, wherein the indication comprises filling or patterning of the active coil area.
73. (Previously Presented) A primary unit according to claim 68 wherein the indication comprises a line or arrow.
74. (Previously Presented) A primary unit according to claim 68, wherein the indication is rendered by printing ink.
75. (Withdrawn) A primary unit according to claim 68, wherein the indication is rendered by raising or lowering parts of the power transfer surface.
76. (Previously Presented) A primary unit according to claim 68, wherein the indication is rendered by an overall shape of the primary unit, or part of it.
77. (Previously Presented) A primary unit according to claim 41, wherein the power transfer surface is substantially planar.

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78. (Previously Presented) A system for transferring power to portable electrical or electronic devices by inductive coupling, comprising:

a first such portable electrical or electronic device;

a second such portable electrical or electronic device;

a primary unit having a power transfer surface and a field generator for generating an electromagnetic field over the power transfer surface;

wherein:

each said device is separable from the primary unit and has a secondary coil adapted to couple with the field, when the device is placed in a working disposition on or in proximity to the power transfer surface, so that power is transferred inductively from the primary unit to the device; and

the first and second devices differ from one another in one or more of the following respects: a device size; an area parallel to the power transfer surface over which the secondary coil of the device extends when the device is in said working disposition; and a power requirement of the device; and

the field generator comprises:

a first coil and a second coil which differs from said first coil in that a power transfer area provided by the second coil, if activated independently of said first coil, differs in size or shape from a power transfer area provided by the first coil if activated independently of the second coil; and

an activator for activating said first and second coils to provide, at the power transfer surface, a first power transfer area for transferring power

inductively to the first device and a second power transfer area for transferring power inductively to the second device.

79. (Previously Presented) A primary unit, for use in a power transfer system that has first and second portable electronic devices, each said device being separable from the primary unit and having a secondary coil adapted to couple with an electromagnetic field generated by the primary unit, when the device is placed in a working disposition on or in proximity to a power transfer surface of the primary unit, so that power is transferred inductively from the primary unit to the device, and the first and second devices differing from one another in one or more of: a device size; an area parallel to the power transfer surface over which the secondary coil of the device extends when the device is in its said working disposition; and a power requirement of the device;

said primary unit being adapted to transfer power inductively to each said device and comprising:

a field generating means having first and second coils for generating said electromagnetic field over the power transfer surface, said second coil differing from said first coil in that a power transfer area provided by the second coil, if activated independently of said first coil, differs in size or shape from a power transfer area provided by the first coil if activated independently of the second coil, and the field generating means also having means for activating said first and second coils to provide, at the power transfer surface, a first power transfer area for transferring power inductively to the first device and a second power transfer area for transferring power inductively to the second device.

80. (Previously Presented) A system for transferring power to portable electrical or electronic devices by inductive coupling, comprising:

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a first such portable electrical or electronic device;

a second such portable electrical or electronic device;

a primary unit having a power transfer surface and a field generating means for generating an electromagnetic field over the power transfer surface;

wherein:

each said device is separable from the primary unit and has a secondary coil adapted to couple with the field, when the device is placed in a working disposition on or in proximity to the power transfer surface, so that power is transferred inductively from the primary unit to the device; and

the first and second devices differ from one another in one or more of the following respects: a device size; an area parallel to the power transfer surface over which the secondary coil of the device extends when the device is in said working disposition; and a power requirement of the device; and

the field generating means comprises:

a first coil and a second coil which differs from said first coil in that a power transfer area provided by the second coil, if activated independently of said first coil, differs in size or shape from a power transfer area provided by the first coil if activated independently of the second coil; and

means for activating said first and second coils to provide, at the power transfer surface, a first power transfer area for transferring power inductively to the first device and a second power transfer area for transferring power inductively to the second device.

81. (Previously Presented) A system according to claim 78, wherein the activator is operable to provide both the first and second power transfer areas at the same time.
82. (Withdrawn) A system according to claim 78, wherein the activator is operable to provide the first and second power transfer areas at different respective times.
83. (Withdrawn) A system according to claim 78, wherein the activator is operable to activate the first coil but not the second coil to provide the first power transfer area, and to activate the second coil but not the first coil to provide the second power transfer area.
84. (Withdrawn) A system according to claim 78, wherein the activator is operable to activate one but not the other of the first and second coils to provide the first power transfer area and to activate both the first and second coils together to provide the second power transfer area.
85. (Previously Presented) A system according to claim 78, wherein the first and second power transfer areas are arranged in a substantially non-overlapping manner at the power transfer surface so that the first and second portable devices can be placed side by side, on or in proximity to the first and second power transfer areas respectively, to receive power from the primary unit at the same time.
86. (Withdrawn) A system according to claim 78, wherein the first and second power transfer areas are arranged in an overlapping manner at the power transfer surface so that only one of the first and second portable devices can be placed, on or in proximity to the first or second power transfer area, as the case may be, to receive power from the primary unit at any one time.

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87. (Previously Presented) A system according to claim 78, wherein the activator is operable to activate at least one of said first and second coils only when one of said portable devices is sensed as being present on or in proximity to the power transfer surface.

88. (Previously Presented) A system according to claim 78, wherein the activator is operable, when one of said devices is placed on or in proximity to said power transfer surface, to sense at least one of said device size, said secondary-coil area and said power requirement of the device, and to selectively activate at least one of said first and second coils according to the sensing result.

89. (Previously presented) A primary unit, for use in a power transfer system that has first and second portable electronic devices, each said device being separable from the primary unit, and the first and second devices differing from one another in one or more of: a device size; a size of a secondary coil of the device, and a power requirement of the device,

said primary unit being adapted to transfer power inductively to each said device and comprising:

a power transfer surface; and

a field generator for generating an electromagnetic field over the power transfer surface such that, when each said device is placed in a working disposition on or in proximity to the power transfer surface, the field couples with the secondary coil of the device so that power is transferred inductively from the primary unit to the device,

wherein the field generator comprises:

a first coil having a first coil size;

a second coil having a second coil size differing from said first coil size; and

an activator for activating said first and second coils to provide, at the power transfer surface, a first power transfer area for transferring power inductively to the first device and a second power transfer area for transferring power inductively to the second device.

90. (Previously Presented) A primary unit according to claim 89, wherein the activator is operable to provide both the first and second power transfer areas at the same time.

91. (Withdrawn) A primary unit according to claim 89, wherein the activator is operable to provide the first and second power transfer areas at different respective times.

92. (Withdrawn) A primary unit according to claim 89, wherein the activator is operable to activate the first coil but not the second coil to provide the first power transfer area, and to activate the second coil but not the first coil to provide the second power transfer area.

93. (Withdrawn) A primary unit according to claim 89, wherein the activator is operable to activate one but not the other of the first and second coils to provide the first power transfer area and to activate both the first and second coils together to provide the second power transfer area.

94. (Previously Presented) A primary unit according to claim 89, wherein the first and second power transfer areas are arranged in a substantially non-overlapping manner at the power transfer surface so that the first and second portable devices can be placed side by side, on or in proximity to the first and second power transfer areas respectively, to receive power from the primary unit at the same time.

95. (Withdrawn) A primary unit according to claim 89, wherein the first and second power transfer areas are arranged in an overlapping manner at the power transfer surface so that only one of the first and second portable devices can be placed, on or in proximity to the

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first or second power transfer area, as the case may be, to receive power from the primary unit at any one time.

96. (Previously Presented) A primary unit according to claim 89, wherein the activator is operable to activate at least one of said first and second coils only when one of said portable devices is sensed as being present on or in proximity to the power transfer surface.

97. (Previously Presented) A primary unit according to claim 89, wherein the activator is operable, when one of said devices is placed on or in proximity to said power transfer surface, to sense at least one of said device size, said secondary-coil area and said power requirement of the device, and to selectively activate at least one of said first and second coils according to the sensing result.

98. (Cancelled)